

Intra-speaker and inter-speaker variability in speech sound pressure level across repeated readings

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ABSTRACT

The intra- and inter-speaker variability of speech sound pressure level (SPL) have been investigated under repeatability conditions in this work. In a semi-anechoic chamber, speech from 17 individuals was recorded with a sound level meter, a headworn microphone and a vocal monitoring device. The subjects were asked to read twice and in sequence two phonetically balanced passages. The speech variability has been investigated for mean, equivalent, and mode SPL from each reading and device. The intra-speaker variability has been evaluated by means of the average among individual standard deviations in the four readings and it reached the maximum of 2 dB for mode SPL. For the inter-speaker variability, the experimental standard deviation of individual averaged SPL parameters among the four repeated measures has been calculated, obtaining the highest value of 5.3 dB for mode SPL. Changes in SPL variability have been evaluated with different logging intervals for each device. The influence of speech material has been investigated by the Wilcoxon test on paired lists of descriptive statistics for SPL distribution and equivalent SPL in the repeated readings. The data reported in this study may be considered as a preliminary reference for the investigation of changes in speech SPL over subjects.

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